

channel stimulate each ear of the listener differently. The purpose of the limitation “over an included angle therebetween (two non-parallel sound fields), the amplitude of each sound field versus angle changes opposite the other” requires both opposing asymmetric (relative to listener-speaker plane) sound fields controlled by the two signals to control the position of the virtual sound image emanating from the single cabinet. The result is the “dynamic spatial articulation” from a “single-point” or “coincident-source” loudspeaker. Claim 2 is the method of producing dynamic spatial articulation from one single-point source loudspeaker. To the listener, the perceived sound image can literally pan from well to the left to well to the right of the loudspeaker and vice versa. Claim 1 specifies the apparatus to accomplish the dynamic spatial articulation from a single-point or coincident-source loudspeaker.

With respect to the rejection of claim 1 as anticipated by Gefvert, Gefvert teaches combining the left and right speakers into a summing center speaker whereas applicant does not use a summing center speaker. Rather, when required, depending on the particular beam shapes desired, applicant’s center speaker is a canceling speaker to enhance gradient steepness with changing angle. Gefvert fails to teach the single-point source design with opposing sound fields and gradients of applicant specified in claim 1. Applicant’s gradients are not suggested in Gefvert’s surround sound disclosure. Moreover, Gefvert’s summing center speaker tends to diminish any gradients that might be produced.

McShane teaches parallel forward-facing loudspeakers with combined right and left channels in each loudspeaker. McShane does not teach the dynamic spatial articulation from a single loudspeaker cabinet having a single-point source design with opposing sound

fields and gradients. Thus, McShane does not teach, or even suggest, applicant's single-point source design or method specified in claims 1 and 2. More particularly, McShane does not teach that with only one loudspeaker with separate right and left speakers the sound image can be moved and totally eliminate the need for a second loudspeaker mirror-imaged to the first, as taught by McShane. With applicant's invention, the combination of independent sound fields in space create the moving image which can pan to the left and right well beyond the physical width of applicant's single loudspeaker. Applicant's loudspeaker does not require the addition or subtraction of the two channels electrically.

For the reasons set forth above, applicant's claims 1 and 2 as amended are believed allowable.

Respectfully submitted,

STEVEN J. EBERBACH

By, 

James M. Deimen, #25504  
320 N. Main Street, Suite 300  
Ann Arbor, MI 48104-1192  
Phone: (734) 994-5947  
Fax: (734) 769-2702